

## 2018 WY MONITORING PLAN UPDATE ADDENDUM

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## SUMMARY

Based on the requirements in the Order R5-2012-0116-R3, a monitoring schedule is submitted annually in the Monitoring Plan Update (MPU) which is due August 1 prior to the monitoring water year (WY). The Coalition submitted the 2018 WY MPU on August 1, 2017 (revised November 1, 2017 and approved November 10, 2017). In order to determine the constituent, monitoring frequency, and where MPM and Normal Monitoring should occur, the Coalition utilized the Pesticide Evaluation Protocol (for Core sites only), reviewed available monitoring results and PUR data from the previous WY. Due to the submittal of the MPU on August 1, the Coalition is only able to review data through May of that year. Therefore, this addendum to the MPU addresses monitoring results from June through September 2017.

### UPDATES TO THE 2018 WY MPU

The Coalition reviewed the exceedances of the WQTLs that occurred from June through September 2017 and updated the 2018 WY monitoring schedule where necessary. Table 1 includes the updates made based on June through September results. The exceedances that occurred from June through September are discussed below and included in Table 2.

**Table 1. Updates to the 2018 WY monitoring schedule.**

ZONE	SITE NAME	SITE TYPE	YEAR	MONTH	S. CAPRICORNUTUM TOXICITY
2	Lateral 5 ½ @ South Blaker Rd	Represented	2018	August	M

M - Management Plan Monitoring.

### Monitoring at Core Sites

Samples collected from Dry Creek @ Church St on August 15, 2017 were analyzed for ammonia and resulted in an exceedance of the WQTL with a concentration of (4.5 mg/L). The Coalition will continue to monitor for ammonia monthly during the 2018 WY at Dry Creek @ Church St for Core site monitoring (2018 WY MPU).

Samples collected from Dry Creek @ Rd 18 on June 13, July 11, August 15, and September 12, 2017 were analyzed for dissolved copper. The concentration of dissolved copper measured in each sample exceeded the hardness based WQTLs. Copper concentrations ranged from 2.2 µg/L to 2.9 µg/L (hardness based WQTL = 1.0 µg/L). Dry Creek @ Rd 18 is in a management plan for dissolved copper and MPM is scheduled from January through April, when applications of copper occur. Monitoring is not scheduled to occur from May through September due to no reported copper use in the past three years (2014-2016; 2018 WY MPU).

Two exceedances of the WQTL for Nitrate + Nitrite as N occurred in samples collected from Lateral 5 ½ @ South Blaker Rd on July 11 and September 12, 2017 (15 mg/L and 13 mg/L, respectively). In addition, toxicity to *S. capricornutum* occurred in samples collected on August 15, 2017 (80% growth compared to the control, Table 2). Lateral 5 ½ @ South Blaker Rd is currently in a management plan for nitrate and toxicity to *S. capricornutum*. During the 2018 WY, MPM is scheduled to occur for toxicity to *S. capricornutum* in October, December, January through June, and September (2018 WY MPU). The Coalition will add MPM in August 2018 based on recent monitoring results (Table 1). Management Plan Monitoring for Nitrate + Nitrite as N is not scheduled to occur during the 2018 WY.

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### Monitoring at Represented Sites

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Samples collected from Hatch Drain @ Tuolumne Rd on July 11, 2017 for MPM resulted in toxicity to *S. capricornutum* with 78% growth compared to the control (Table 2). No TIE was conducted since percent growth was greater than 50%. Hatch Drain @ Tuolumne Rd is in a management plan for toxicity to *S. capricornutum* and MPM is scheduled for January, May, and July of 2018 (2018 WY MPU).

Samples collected from Hilmar Drain @ Central Ave during MPM on July 11, 2017 resulted in toxicity to *S. capricornutum* (32% growth compared to the control, Table 2). The TIE conducted on the sample was inconclusive, noting that neither cationic metals nor non-polar organics were the source of toxicity. During the 2018 WY, MPM for toxicity to *S. capricornutum* is scheduled for April, July, and September of 2018 (2018 WY MPU).

Samples collected from Levee Drain @ Carpenter Rd on June 13, 2017 for MPM resulted in toxicity to *S. capricornutum* (61% growth compared to the control, Table 2). Levee Drain @ Carpenter Rd is in a management plan for toxicity to *S. capricornutum* and MPM occurred in December 2017 and is scheduled to occur in February and June of 2018 (2018 WY MPU).

The Coalition conducted MPM on August 15, 2017 at Prairie Flower Drain @ Crows Landing Rd for chlorpyrifos and toxicity to *C. dubia*. Lab results indicated an exceedance of the WQTL for chlorpyrifos (0.045 µg/L) and toxicity to *C. dubia* (0% survival compared to the control, Table 2). A TIE was conducted and concluded that organophosphate insecticides were the source of toxicity. The baseline sample produced 5.6 TU (Toxic Units) and the concentration of chlorpyrifos produced ~1.1 TU, indicating chlorpyrifos was responsible for about 20% of the toxicity. During the 2018 WY, MPM for chlorpyrifos and toxicity to *C. dubia* is scheduled to occur from March through August (2018 WY MPU).

**Table 2. Exceedances of the WQTLs from June 1, 2017 through September 30, 2017.**

Listed by zone and alphabetically by site name.

ZONE	SITE NAME	SAMPLE DATE	SEASON	SITE TYPE	DO (<5 MG/L)	DO (<7 MG/L)	PH (<6.5 OR >8.5)	SC (>700 µS/cm)	E. COLI (235 MPN/100)	AMMONIA (1.5 MG/L OR VARIABLE BASED ON PH/TEMP)	COPPER, DISSOLVED (HARDNESS BASED WQTL)	NITRATE + NITRITE (10 MG/L)	CHLORPYRIFOS, 0.015 µg/L	CERIODAPHNIA % SURVIVAL	SELENASTRUM % GROWTH
5	Deadman Creek @ Gurr Rd	6/13/2017	Irrigation3	Represented		5.12									
6	Dry Creek @ Rd 18	6/13/2017	Irrigation3	Core							2.9 (1.0)				
6	Dry Creek @ Rd 18-FD	6/13/2017	Irrigation3	Core							2.9 (1.0)				
1	Dry Creek @ Wellsford Rd	6/13/2017	Irrigation3	Core		6.63			410.6						
2	Lateral 5 1/2 @ South Blaker Rd	6/13/2017	Irrigation3	Core					686.7						
2	Lateral 6 and 7 @ Central Ave	6/13/2017	Irrigation3	Represented			9.12								
2	Levee Drain @ Carpenter Rd	6/13/2017	Irrigation3	Represented		0.25		1476							61
2	Prairie Flower Drain @ Crows Landing Rd	6/13/2017	Irrigation3	Represented		0.35		2710							
2	Unnamed Drain @ Hogin Rd	6/13/2017	Irrigation3	Represented		5.38		780							
6	Dry Creek @ Rd 18	7/11/2017	Irrigation4	Core							2.4 (1.0)				
1	Dry Creek @ Wellsford Rd	7/11/2017	Irrigation4	Core		5.29									
2	Hatch Drain @ Tuolumne Rd	7/11/2017	Irrigation4	Represented		2.16		1603							78
2	Hilmar Drain @ Central Ave	7/11/2017	Irrigation4	Represented											32
2	Lateral 5 1/2 @ South Blaker Rd	7/11/2017	Irrigation4	Core								15			
2	Levee Drain @ Carpenter Rd	7/11/2017	Irrigation4	Represented		1.64									
5	Miles Creek @ Reilly Rd	7/11/2017	Irrigation4	Core		6.85			816.4						
2	Prairie Flower Drain @ Crows Landing Rd	7/11/2017	Irrigation4	Represented		1.15		1898							
2	Unnamed Drain @ Hogin Rd	7/11/2017	Irrigation4	Represented		NR		2603							
5	Deadman Creek @ Hwy 59	8/15/2017	Irrigation5	Represented		6.69									
1	Dry Creek @ Church St	8/15/2017	Irrigation5	Core		4.02			>2419.6	4.5 (3.5)					
6	Dry Creek @ Rd 18	8/15/2017	Irrigation5	Core	4.01						2.7 (1.0)				
2	Hatch Drain @ Tuolumne Rd	8/15/2017	Irrigation5	Represented		3.40		1298							
2	Lateral 5 1/2 @ South Blaker Rd	8/15/2017	Irrigation5	Core											80
2	Prairie Flower Drain @ Crows Landing Rd	8/15/2017	Irrigation5	Represented		2.83		1345					0.045	0	
5	Deadman Creek @ Hwy 59	9/12/2017	Irrigation6	Represented		6.84									

ZONE	SITE NAME	SAMPLE DATE	SEASON	SITE TYPE	DO (<5 MG/L)	DO (<7 MG/L)	PH (<6.5 OR >8.5)	SC (>700 µS/CM)	E. COLI (235 MPN/100)	AMMONIA (1.5 MG/L OR VARIABLE BASED ON PH/TEMP)	COPPER, DISSOLVED (HARDNESS BASED WQTL)	NITRATE + NITRITE (10 MG/L)	CHLORPYRIFOS, 0.015 µG/L	CERIODAPHNIA % SURVIVAL	SELENASTRUM % GROWTH
1	Dry Creek @ Church St	9/12/2017	Irrigation6	Core		4.57			547.5						
6	Dry Creek @ Rd 18	9/12/2017	Irrigation6	Core	2.83		5.93				2.2 (1.0)				
6	Dry Creek @ Rd 18-FD	9/12/2017	Irrigation6	Core							2.4 (1.0)				
2	Hatch Drain @ Tuolumne Rd	9/12/2017	Irrigation6	Represented		0.12		1599							
3	Highline Canal @ Hwy 99	9/12/2017	Irrigation6	Core		6.99									
2	Hilmar Drain @ Central Ave	9/12/2017	Irrigation6	Represented				813							
2	Lateral 5 1/2 @ South Blaker Rd	9/12/2017	Irrigation6	Core					488.4			13			
5	Miles Creek @ Reilly Rd	9/12/2017	Irrigation6	Core		6.54									
2	Prairie Flower Drain @ Crows Landing Rd	9/12/2017	Irrigation6	Represented		0.19		1378							